Everything that Burroughs wrote was a work of art; he had a picturesque, melodious style without preciosity, and he kept close to his own experiences of wild Nature and country life. Burroughs had a strongly developed scientific mood, but his essays are not so much informative as appreciative, expressing a sympathetic interest in common things and the endless novelty of the seasons. While he had an almost fiery dislike of those who read the man into the beast in a facile way, making an often tawdry homunculus of many a common creature, he had himself a great gift in getting near the character of the birds and animals he studied. It was the true inwardness of Nature-study that Burroughs expressed—a well-informed love of the country. The manner in which he expressed this is probably unsurpassable, and we do not know why his writings should ever grow old.

WE regret to announce the death of PROF. RUTHERFORD J. PYE-SMITH on Wednesday, March 23, at the age of seventy-three years. Prof. Pye-Smith was educated at Guy's Hospital, and became F.R.C.S. in 1875. In the following year he went to Sheffield as a general practitioner, and rapidly made a name for himself as a surgeon. At that time the epoch-making work of Lister on antiseptics was revolutionising surgery, and Prof. Pye-Smith was one of the pioneers of the new methods in England. On the constitution of Sheffield University he was elected professor of surgery, a post which he held until his retirement a few years ago, when he received the title of emeritus professor and the honorary degree of Ch.M. He also represented Sheffield University on the General Medical Council, where his practical experience of the problems of medical education was greatly appreciated.

Notes.

THE KING has been pleased to approve the award of the Royal medals of the Royal Geographical Society as follows:—Founder's medal to Mr. Vilhjalmur Stefansson, for his distinguished services to the Dominion of Canada in the exploration of the Arctic Ocean; and Patron's medal to Gen. Bourgeois, Senator for Alsace, Membre de l'Institut, for his long and eminent services to geography and geodesy as Director of the Service géographique de l'Armée, and president of the Conférence Internationale de la Carte du Monde au Millionième. The council has made the other awards of the society as follows:—The Murchison grant to Comdt. Maury, for his surveys in the Belgian Congo; the Back grant to Miss Marion Newbigin, for her contribution to geography, particularly of the Balkans; the Cuthbert Peek grant to Capt. J. B. L. Noel, for his reconnaissance of the eastern approaches to Mount Everest and other geographical work; and the Gill memorial to Lt.-Col. M. N. MacLeod, R.E., for his contribution to the theory of survey from air photographs.

A SELECTED series of specimens in illustration of the Neolithic industry from the stone-axe factory of Graig-lwyd, Penmaenmawr, will be exhibited at the rooms of the Royal Anthropological Institute, 50 Great Russell Street, W.C.1, on April 20–23. During the recent investigation of this important site, which was carried out by a committee of the institute, the actual work of excavation being under the direction of Mr. S. Hazzledine Warren, a mass of valuable material was obtained. This included what is probably the finest series of specimens illustrating the manufacture of a stone axe that has ever been found. It is hoped that a more extended exhibition may be arranged where more space is available; but as this is at present uncertain, those who are interested in prehistoric man should not miss the opportunity of examining the selected series. At the close of the exhibition typical series of the implements will be distributed to various museums throughout the country.

THE terms of the resolutions which it is proposed to submit to the Committee of Ways and Means of the House of Commons to fulfil the Government's promise to safeguard British industries have been issued as a White Paper (Cmd. 1219) under the heading "Safeguarding of Industries." In the first resolution it is proposed that an import tax of $33\frac{1}{3}$ per cent. be levied for five years on articles which come under the categories of optical instruments, chemical glassware, scientific and technical instruments of precision such as galvanometers, pyrometers, etc., ignition magnetos, tungsten and its products, and synthetic organic chemicals with the exception of dyestuffs, irrespective of the country from which they may be imported. The second resolution aims at protection from "dumping," and no time-limit for its operation is given. If such articles are exported to the British Isles at prices below the cost of production, or if depreciation of currency enables foreign manufacturers to sell such goods here at prices below those at which they can be profitably manufactured in this country, an additional import tax of $33\frac{1}{3}$ per cent. of the value of the article is suggested. Such articles imported from Germany would thus be subject to a tax of 50 per cent. of their value by the operation of the reparation measures, a further $33\frac{1}{3}$ per cent. under the first resolution and another $33\frac{1}{3}$ per cent. under the second, making in all an import tax of $116\frac{2}{3}$ per cent. of the value as determined by the wholesale price obtaining in the country of origin.

A PATHETIC document reaches us by way of Canada referring to the distressed condition of a number of retired university professors in Vienna. Among those in greatest need are some annuitants whose names are world-famed. Not everyone whose pension fails can easily start life again as an agricultural labourer. By analogy with the desolated French towns taken over by corresponding English cities, the Continental universities might be allotted to English universities for support; for example, Cambridge might offer to educate the children of Viennese professors. Better still, the botanists might look after botanists, the chemists after chemists, and this assistance might be organised through our learned societies. The poverty and want of the Vienna intellectuals are confirmed by reports received through the Emergency and War Victims Relief Committee of the Society of Friends (hon. secretary, Miss Ruth Fry, 27 Chancery Lane, W.C.2) in correspondence with their outpost at Singerstrasse 16, Wien I. There is book-hunger as well as food-hunger, and for the relief of the former an Anglo-American Library for Central Europe has been formed (hon. secretary, B. M. Headicar, London School of Economics, Clare Market, W.C.2). Readers of Nature might offer scientific papers and transactions and short-circuit correspondence by direct communication. The Austrian League of Nations Union (hon. secretary, Herr Arthur Müller, Oesterreichische Völkerbundliga, Burgring 9, Wien I.) is preparing to act as trustees for funds to be devoted to the technical education of the youth of Vienna.

India at the present moment is in a stage of transition, and the form her institutions will take for the next few generations depends on the success of certain enlightened men who are striving against great odds to combat prejudice, ignorance, and self-interest. A clear lead was given to the industries of the country by the work of the Indian Industrial Commission, and in the case of the chemical industries by that of the Chemical Services Committee which was appointed as an outcome of the Commission. Nevertheless, when one reads reports such as that recently published by the Bengal Chamber Committee on the suggestions put forward by the Chemical Services Committee it is difficult to believe that there is any real grasp of the needs of the moment, and that inter-provincial jealousies may not, after all, seriously affect the industrial development of the country. In these circumstances it is pleasant to record the appearance of the first number of the *Journal of Indian Industries and Labour* (Calcutta, published by order of the Government of India), which, in accordance with the foreword written by Sir Thomas Holland, is "one step towards provincial co-operation" and "a medium for communicating to a wider public . . . information that will assist private enterprise." The articles are interesting and well written, a particularly useful feature being the summaries of industrial intelligence by the Director of Industries of each province. On the whole, there is little call for criticism excepting perhaps a statement on p. 5 that cellulose can be converted into starch, which is, to say the least of it, premature. Everyone concerned with this useful and admirable production is certainly to be congratulated.

The eleventh annual May lecture of the Institute of Metals will be delivered at 8 o'clock on Wednesday, May 4, at the Institution of Mechanical Engineers, by Prof. T. Turner, who will take as his subject "The Casting of Metals."

With a portion of the funds at their disposal the trustees of the Captain Scott Memorial Fund have decided to establish a Polar Research Institute in connection with the new department of geography in the University of Cambridge. In an article entitled "The Future of Polar Exploration" in the *Geographical Journal* for March Mr. F. Debenham gives some details of the scheme. The object is to have a place not only where the results of polar expeditions can be worked out and the manuscripts and log-books deposited, but also where all information in the form of books and samples of equipment can be collected ready for examination. It is hoped eventually to provide a library, map-room, and museum of polar gear and equipment. The funds allotted by the trustees are sufficient for the foundation, but they will not extend to the purchase of material and collections. An institute of this kind developed on the lines suggested would be of service to polar explorers of the future, and the fact that many members of Capt. Scott's scientific staff, including Dr. E. A. Wilson, were from Cambridge gives that University a special claim to have the institute. At the same time Cambridge will find it difficult even with adequate funds to make collections of polar maps and literature equal to those now available in various libraries in London or Edinburgh.

Some interesting questions relating to the influence of environment on culture in the Congo area were discussed by Mr. E. Torday in a paper on the Batetela read at a meeting of the Royal Anthropological Institute on March 15. The Batetela, having migrated from their original eastern home and penetrated a region of West African culture, exhibit a quaint mixture of East and West African, of forest and grassland culture, mixed with beliefs and customs borrowed from the Akela, the Baluba, the Arab, and even the European. Part settled in the grassland between the Lubefu and the Lomami, while others migrated to the great forests on the banks and north of the Lukenye River. Mr. Torday traced in detail the differences in culture between the grassland dwellers, the Sungu, the forest dwellers, the Bahamba, and a third section, the Olemba, whom he considered as the nearest to the original type of Batetela. In the discussion which followed the reading of the paper both the president, Dr. W. H. R. Rivers, and Prof. Elliot Smith pointed out that Mr. Torday's evidence was equally important for the question of the diffusion and contact of cultures. They instanced the practice of cicatrisation, which showed a combination of two elements, as a result of which the cicatrices were arranged in linear patterns, and had afforded Prof. Elliot Smith the only parallel for an example of cicatrisation on the skin of a woman found in Nubia dating from 2000 B.C.

One more stage in the study of the smaller Oligochæts is marked by the publication of a paper by Welch on "The Genera of the Enchytræidæ" (Trans. Amer. Micro. Soc., vol. xxxix., January, 1921, pp. 25-50). The author recognises 16 genera and approximately 325 species, and supplies a useful bibliography. As there is no country in which these "pot-worms" flourish more luxuriantly than in Great Britain, where about a dozen genera are found, with a vast number of species, this guide to classification should prove valuable to systematists in this country.

IN a short note on the fresh-water isopods known as *Asellus aquaticus* (*Ann. Mag. Nat. Hist.*, ser. 9, vol. v., 1920) Prof. C. Chilton directs the attention of English naturalists to a recent paper by Dr. E. G. Racovitza, who has shown that under the name *aquaticus* two distinct species have been included. This name is retained for the commoner species which has been fully described and figured; the other species has been named *meridianus*, and Prof. Chilton records examples from Tunbridge Wells. For the differences between the species the reader is referred to Prof. Chilton's note or to Dr. Racovitza's paper in *Arch. Zool. Expér.*, vol. lviii., 1919.

SOME years ago the authorities of the American Museum of Natural History founded a journal for the purpose of arousing public interest in the work of the museum. Brightly written by members of the museum staff, and marvellously illustrated, that journal has earned for itself an honoured place all over the world. We might well follow the lead America has set us in this matter. The latest issue (vol. xx., No. 5), among other good things, contains a most interesting article on the unicorn and its horn by the director of the museum, Dr. Frederic A. Lucas, and another, no whit less readable, by Dr. W. D. Matthew on Canadian dinosaurs, while Mr. Malcolm Anderson contributes a most instructive account of North China in winter.

IN his presidential address (printed in *Science* for January 21 last) before the Zoological Section of the American Association for the Advancement of Science at its Chicago meeting Prof. W. M. Wheeler discussed the subject of organisation in research as it appears to a biologist, and pointed out some of the dangers attending post-war efforts in this direction. He mentioned the array of instincts, emotions, and interests on which the activities of the investigator depend and the great diversity of mental aptitude which necessarily accompanies the genius for different types of research. Prof. Wheeler claims that any organisation dealing with research should refrain carefully from interfering in any degree with the free expression of the individual's exceptional aptitudes in his own way. In these days when the amateur in scientific research is passing we need to beware of fettering in any way by Government or other interference the activities of the professional scientific man.

A HUMAN embryo obtained by Dr. Vernon Favell on the fourteenth day after the commencement of the missed menstrual period, and described by Prof. Bryce at a recent meeting of the Anatomical Society of Great Britain and Ireland, is of outstanding interest in that it presents a human stage theoretically essential, but not actually seen hitherto. The stage represented is that in which the amnio-embryonal rudiment is solid and connected to the blastocyst wall by a cellular stalk. The specimen consists of a relatively large blastocyst around which moderately extensive areas of plasmodi-trophoblast can be seen. Within the cavity are many scattered amœboid cells, the forerunners of the extra-embryonic mesoderm. The yolk-sac vesicle is relatively small, and a large, somewhat scattered group of cells lies between it and the amnio-embryonal rudiment. The latter consists of an undifferentiated cell mass with spaces suggestive of a process of vacuolisation and connected to the blastocyst wall at one point by a band of cells. The majority of early human embryos previously described have been of necessity in a more or less pathological condition, and the appearances seen cannot be regarded as strictly normal. Prof. Bryce makes no claim that his embryo is exceptional in this respect. He interprets the specimen as one in which the trophoblast vesicle has continued to grow, while the embryonic rudiment has lagged behind or ceased to develop, but has been preserved in an early phase of its differentiation. Further study of the specimen will undoubtedly furnish valuable information, and its detailed description is awaited with considerable interest.

THE final report of the Grain Pests (War) Committee has been drawn up by Prof. W. A. Herdman and was issued during February of the present year. The Committee was appointed by the Council of the Royal Society in June, 1916, as the result of correspondence with the Board of Agriculture, in which the latter requested the Royal Society to initiate investigations "in relation to the damage done to grain by insects." The report gives a concise summary of the conclusions arrived at as the result of the various lines of research carried out. It emphasises the serious importance to the Empire of the elimination of grain pests and the necessity for bringing into being a permanent body capable of dealing with all organisms causing destruction to grain and other stored products. It is hoped that the Department of Scientific and Industrial Research will see its way to make an annual grant of money in order to provide the salaries and equipment of two or three officers specially selected for carrying out researches on those problems which are admittedly urgent. Probably by means of the judicious expenditure of a relatively small sum of money for a few years a great deal of valuable foodstuffs would be saved from destruction by insects and other grain pests.

THE essential characteristics of United States climates is the subject of an article by Prof. R. de C. Ward, of Harvard University, in the *Scientific Monthly* for December last. For descriptive details the United States is subdivided into climatic districts, and these are called the Eastern, the Gulf, the Plains, the Plateau, and the Pacific; with the three last-named a further subdivision between north and south is suggested by the difference of latitude. Temperature, rainfall, and other climatic conditions are given in fair detail for the several districts, and a comparison is made of the different advantages for fruit-growing, farming, and general agriculture. The movements of storms and cyclonic disturbances necessarily enter largely into the general explanation for rains experienced, the disturbances travelling generally from west to east. The article gives a very general idea of the different meteorological conditions which prevail in various parts of the United States, especially with regard to temperature; on the whole, it is shown to be highly favoured in general climate. The space given to the article is necessarily too limited for great detail.

The December issue of *Terrestrial Magnetism and Atmospheric Electricity* contains the preliminary results of the magnetic survey of the Indian and Southern Oceans carried out by the United States survey ship *Carnegie* during the summer and autumn of last year. The values obtained for the deviation of the compass over the south-easterly course traversed from Colombo to a point about 10° west of the Straits of Sunda differ little from those given in Admiralty Charts 3776 and 3777 for 1917, but over a considerable area of the Indian Ocean directly south of Ceylon, between latitudes 25° and 35° S., the westerly deviations are a degree or more greater than those given in the charts. From this region to Fremantle, and thence to a region in latitude 50° S. directly south of South Australia and Victoria, the new observations agree with the charts, but in the latter area the easterly deviations given in the charts are about 1° too small. For the rest of the course to New Zealand the observations agree fairly well with previous records.

In an address to the students of Faraday House on February 25 Sir Philip Dawson discussed the possibilities of electric traction in connection with heavy railway work. He considered that many railway engineers laid too much stress on standardisation, and this was preventing progress. Great harm can be done by excessive standardisation. The solution advisable for one line of railway might be quite unsuitable for another. He thought that the French Government had made a mistake in standardising 1500 volts direct current for electric traction. Germany, Sweden, and Switzerland had adopted 16,000 volts alternating current as the standard pressure. The United States has not yet introduced any legislation, and side-by-side extensions are going on of 3000-volt direct-current systems and 11,000-volt single-phase alternating systems. Few realised the amount of power required for electric traction, *e.g.* a train going out of Victoria Station took 2000 kw. (2680 h.p.), and Sir Philip calculated that of the total demand for electricity in the London area contemplated by the Electricity Commissioners about half would be required for the railways. When the suburban electrification of the Brighton system was completed it alone would require 50,000 kw. There had been practically no interference with telegraph and telephone circuits by the large currents used on this railway.

An illustrated account of the new works at Canning Town belonging to the British Glass Industries, Ltd., appears in the *Engineer* for February 25. These works are already in partial operation, and are designed to be the largest glassworks in Great Britain. The plant will consist of nine units, each complete in itself as a glass factory, and the total output of bottles or jars when the works are in full operation will be approximately 600,000 a day. To obtain this output continuous shifts will be employed. The plant is being laid out in conformity with modern practice, including mechanical mixing and the latest types of melting furnaces and gas-producer and annealing plants. Pyrometric control of temperature is employed in both the melting and annealing furnaces. It is claimed that there is only one fully automatic bottle-making machine in existence—the Owens—all the others requiring the addition of a separate device for feeding the glass into the machine. The type installed at the Canning Town works is the Daubenspeck, which is designed for making wide-mouthed bottles; this machine is made by Messrs. Fraser and Chalmers, of Erith.

An illustrated account of a new type of crankless steam engine appears in *Engineering* for March 11. This engine has been constructed to the designs of Mr. A. G. M. Michell, the inventor of the Michell thrust-block. The engine is enclosed in a cylindrical casing, and the rotating shaft is co-axial with the casing. At the centre of the shaft is a swash-plate, *i.e.* a plate with its plane inclined to the shaft axis, 62·5° in the experimental engine, but to be made 67·5° in future. There are eight cylinders, four on each side of the swash-plate arranged round the shaft with their axes parallel to the shaft axis. Opposing pistons are connected together by a bar crossing the outside of the swash-plate. Each of the eight pistons bears against the side of the swash-plate through a Michell thrust-pad. The engine is uniflow, *i.e.* steam acts on one side of the pistons only, and steam is admitted to the cylinders by means of two rotating disc valves, one at each end of the casing, and exhaust at the end of the outer stroke takes place through ports uncovered by the pistons. The design lends itself to very perfect balancing, and tests show that the designed speed of 1200 r.p.m. can be greatly exceeded. The cylinders are each 5 in. in diameter, and 0·92 indicated h.p. per cylinder per 100 r.p.m. has been obtained. The success of this experimental engine is due to the Michell pads, for which the coefficient of friction is of the order 0·002.

Owing to the shortage of edible fats in Germany during the war, attempts were made to produce fatty acids from natural hydrocarbons of the paraffin type which were obtained by the distillation of lignite. The progress made is reviewed in the *Chemical Trade Journal* for December 4 last and in the Journal of the Society of Chemical Industry for February 28. Many processes have been described, and the conclusion arrived at is that, although success does not appear to have been attained, the conversion shows promise. Two main groups of methods have been used: (1) The synthesis of fatty acids from hydrocarbons of low molecular weight, such as ethylene and acetylene, by polymerisation and oxidation, and (2) the partial degradation and oxidation of hydrocarbons of high molecular weight. In the Zelinsky process a chlorinated hydrocarbon was treated by the Grignard reaction for the production of fatty acid. This process is said to have been in use in Germany in the later years of the war. Harries treated unsaturated hydrocarbons of high molecular weight with ozone, decomposed the ozonides with steam, and transformed the resulting peroxides into fatty acids by treatment with caustic alkali. The most promising method, however, is the direct oxidation of a hydrocarbon mixture such as petroleum or paraffin wax by atmospheric oxygen in presence of a catalyst consisting of a resinate of vanadium, manganese, etc. In this process, due to Franck, a net yield of 70–75 per cent. of fatty acids suitable for soap-making, esterification to produce fats, and other purposes is claimed. The process was in operation on a technical scale.

Messrs. A. Gallenkamp and Co., 19–21 Sun Street, E.C.2, have issued a revised catalogue of electric furnaces suitable for a variety of laboratory purposes. The advantages possessed by electric furnaces are evidently receiving due recognition, for Messrs. Gallenkamp state that they have sold more than 1100 furnaces during the past five years. The construction of these furnaces is very simple; a tube or muffle of fused silica is wound with a resister wire and the exterior well lagged to diminish heat loss. Such furnaces are capable of temperatures up to 1000° C.; beyond this point it becomes necessary to employ platinum-foil windings and refractory tubes or muffles.

Messrs. Bernard Quaritch, Ltd. (11 Grafton Street, W.1), have just issued a catalogue (No. 362) of second-hand books and periodicals ranging over a variety of subjects. The sections most likely to interest readers of Nature are those devoted to botany, early science, natural and physical sciences, and periodicals. In the latter there are many sets and long runs, some not otherwise easily procurable. Among the items are *Annales de Chimie et de Physique* (1789–1909), the *Journal of Botany* (vols. i.–xlvi.), Philosophical Transactions of the Royal Society (1665–1918), and Transactions of the Zoological Society of London (1833–1915). There is also a set of the publications of the Ray Society (1844–1915).

Erratum.—Mr. W. J. Perry writes:—"In the article in Nature of March 31 entitled 'The Development and Spread of Civilisation,' I inadvertently put 3700 B.C. for a date that should be 3400 B.C."

Our Astronomical Column.

Recent Brilliant Fireballs.—Mr. W. F. Denning writes that he has received twenty-five accounts of the brilliant fireball of March 16, and has been able to revise his preliminary deductions, which were based on scanty data. The height of the object was from about 68 to 25 miles from over Moffat to Berwick, path 81 miles and velocity 11 miles per second, radiant point at 72°+12°. The average of a number of estimates of the duration of flight was 7½ seconds. The radiant point does not correspond with any known shower in March, and the position shows that the fireball was overtaking the earth in its orbit and moving with very slow apparent velocity. It is curious that so many fireballs appear to be revolving in direct orbits, but the fact seems clearly proved on ample evidence. It is also a significant feature that many fireballs of the slow-moving type exhibit radiants which are situated on or near the ecliptic.

Splendid fireballs were also observed on March 25 13h. 13m. and March 29 7h. 27m. G.M.T. from the metropolitan district and south-eastern counties. A number of descriptions have been received, but few of them are exact and accurate. The approximate real paths derived from the best data available at the time of writing are:

	G.M.T. h.	m.	Height at first. Miles.	Height at end. Miles.	Path. Miles.	Velocity. Miles per second.	Radiant. ° °
March 25	13	13	67	56	88	—	181 − 29
29	7	27	61	47	71	12	48 − 9 62 − 10

The former appears to have a possible connection with the comet of 1264, for which Prof. A. S. Herschel computed a radiant at 182·5° − 28° on March 25. This comet was a brilliant one, and passed within two millions of miles of the earth's orbit.

The past month of March has furnished large fireballs of unusual numbers and interest, and the popular idea has been to ascribe them to the oncoming comet of Pons-Winnecke, though, as a matter of fact, no connection whatever can be proved.

Another Investigation of the Einstein Spectral Shift.—The *Comptes rendus* of the Paris Academy of Sciences for March 7 contains an investigation by M. A. Perot, communicated by Dr. H. Deslandres. The investigation is based on a study of the magnesium spectrum. The wave-lengths in Ångström units of the lines b_1, b_2, b_4 in the arc at atmospheric pressure were found to be 5183·614, 5172·690, and 5167·340 respectively.

Tests were then made at different pressures, and it was found that the value of $d\lambda/\lambda$ per atmosphere is $1{\cdot}35/10^6$ for b_2 and $1{\cdot}67/10^6$ for b_1, so that comparison between b_1 and b_2 should give the pressure of the region where the spectral lines are produced. In this manner, by a discussion of solar and arc spectra obtained by photography in the year 1911, the value of the pressure of the absorbing layer on the sun is found to be equivalent to -6 cm. of mercury ± 20 cm. Of course, the pressure cannot actually be negative, but it is inferred that it is very low, and, consequently, that nearly the whole of the atmospheric term $1{\cdot}35/10^6$ must be applied to the solar measures of b_2 to make them comparable with the terrestrial ones. The value of $d\lambda/\lambda$ for sun *minus* arc is then $(1{\cdot}16+1{\cdot}35)/10^6$, in good agreement with the Einstein value, which is $2{\cdot}12/10^6$. The author has failed to notify the regions of the sun to which the measures apply. This should have been done, in view of the considerable differences for different regions found by Mr. Evershed and others.

Nova Aquilæ III.—In the Journal of the Manchester Astronomical Society for the sessions 1917–20, which has recently been received, there appears a valuable series of photographs of the spectra of Nova Aquilæ III. taken by Mr. C. F. Butterworth with a 6·3-in. prismatic reflector. The period covered is from June 10 to November 14, 1918, and thirty-six photographs are shown taken on twenty-two days distributed fairly evenly over this period. Although the dispersion obtained was extremely small (243 Å.U. to 1 mm.), the photographs are evidently good enough to stand considerable enlargement and show plenty of detail. The general sequence of changes in the spectrum is well shown, and many of the smaller details—such as the complex structure of the hydrogen bands—may also be detected. The series as a whole forms a useful addition to the observations already published concerning this important nova. In addition, Mr. Butterworth gives a table of measures of the breadths of the more important bright bands at four different stages of the star's career.